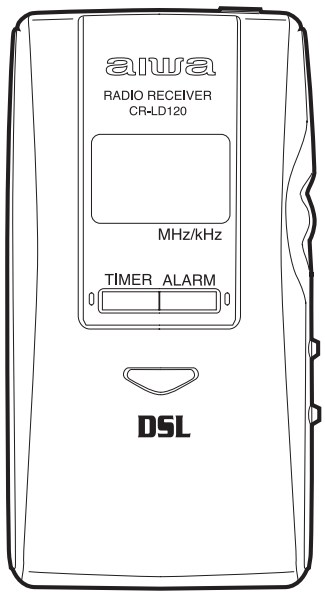
aiwa
SERVICE

CR-LD121



SERVICE MANUAL

RADIO RECEIVER

aiwa

SPECIFICATIONS

Frequency range:	
Reception area E	AM 531 – 1,602 kHz (9 kHz steps) FM1, FM2 87.5 – 108 MHz (50 kHz steps)
Reception area U	AM 530 – 1,710 kHz (10 kHz steps) FM1, FM2 87.5 – 108.1 MHz (200 kHz steps)
Maximum output:	YH: 8 mW + 8 mW (EIAJ 32 ohms) YZ: 4 mW + 4 mW (EIAJ 32 ohms)
Power sources:	DC 1.5 V using an R03 (size AAA) dry cell battery
Maximum dimensions:	42 (W) x 80 (H) x 18 (D) mm (excluding projecting parts and controls)
Weight:	Approx. 44 g excluding battery

• Design and specifications are subject to change without notice.

ACCESSORIES / PACKAGE LIST

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	8B-RCA-902-010		IB,YHT(ECC)C<YH>
1	8B-RCA-905-010		IB,YZ(EGF)C<YZ>
1	8B-RCA-906-010		IB,YZ(SID)C<YZ>
1	8B-RCA-907-010		IB,YZ(PHNCZ)C<YZ>
2	87-B30-107-010		HEADPHONE,HP-M022(T)

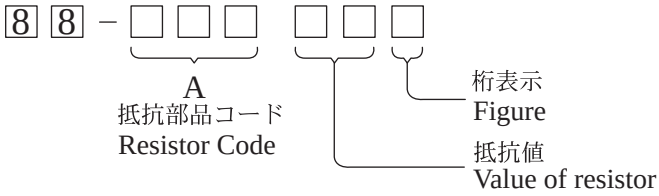
ELECTRICAL MAIN PARTS LIST

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
IC			
	87-A20-076-040		C-IC,TA2022AFN
	87-A20-089-040		C-IC,PST9011
	87-A20-090-040		C-IC,PST9010
	87-A20-124-080		C-IC,TK11823
	87-A20-745-040		C-IC,TA2030FN
	87-A21-098-040		C-IC,NJM2096M
	87-A21-383-010		C-IC,UPD17934AGK-512
TRANSISTOR			
	87-026-425-080		C-TR,RN2307
	87-026-470-080		C-TR,HN1C03F
	87-026-585-080		C-TR,IMX1 HQQ
	87-A30-253-040		C-TR,2SA1313
	87-A30-254-040		C-TR,HN1B01F
	89-113-625-080		C-TR,2SA1362GR
	89-115-884-080		C-TR,2SA1588Y
	89-341-165-080		C-TR,2SC4116GR
	89-342-153-080		C-TR,2SC4215(O/Y)
	89-508-804-080		C-FET,2SK880Y
	89-508-824-080		C-FET,2SK882Y
DIODE			
	87-001-167-080		C-DIODE,1SS302
TUNER C.B			
	S0-051-570-000		C-FILTER,CFKMFC5157
BPF101	87-008-555-080		C-FLTR,GTVS05
C101	87-010-575-080		C-CAP,S 560P-50 UJ
C102	87-010-179-080		C-CAP,S 1200P-50 KB
C103	87-010-197-080		C-CAP,S 0.01-25 B
C104	87-010-150-080		C-CAP,S 6P-50 CH
C106	87-010-171-080		C-CAP,S 270P-50 SL
C108	87-010-197-080		C-CAP,S 0.01-25 B
C110	87-010-145-080		C-CAP,S 1P-50 CH
C114	87-010-167-080		C-CAP,S 120P-50 SL
C116	87-010-197-080		C-CAP,S 0.01-25 B
C118	87-010-321-080		C-CAP,S 82P-50 CH
C119	87-A10-047-080		C-CAP,U 1-10 ZF
C120	87-010-198-080		C-CAP,S 0.022-25 B
C121	87-010-178-080		C-CAP,S 1000P-50 B
C122	87-012-141-080		C-CAP,S 0.22-16 F
C123	87-010-831-080		C-CAP,U 0.1-16 F
C124	87-010-831-080		C-CAP,U 0.1-16 F
C125	87-010-177-080		C-CAP,S 820P-50 SL
C126	87-010-831-080		C-CAP,U 0.1-16 F
C127	87-010-194-080		C-CAP,S 0.047-25 F
C128	87-010-191-010		C-CAP,S 0.015-50 F<YH>
C128	87-010-197-080		C-CAP,S 0.01-25 B<YZ>
C129	87-010-191-010		C-CAP,S 0.015-50 F<YH>
C129	87-010-197-080		C-CAP,S 0.01-25 B<YZ>
C130	87-A10-047-080		C-CAP,U 1-10 ZF
C131	87-A10-047-080		C-CAP,U 1-10 ZF
C132	87-010-178-080		C-CAP,S 1000P-50 B
C133	87-010-198-080		C-CAP,S 0.022-25 B
C134	87-010-320-080		C-CAP,S 68P-50 CH
C135	87-010-178-080		C-CAP,S 1000P-50 B
C136	87-010-831-080		C-CAP,U 0.1-16 F
C137	87-010-305-080		C-CAP,470P-50 CH
C138	87-010-157-080		C-CAP,S 18P-50 SL
C139	87-010-154-080		C-CAP,S 10P-50 CH
C140	87-010-197-080		C-CAP,S 0.01-25 B
C141	87-A10-952-080		C-CAP,TN 22-4 M A MCA
C142	87-016-503-080		C-CAP,TN 4.7-4 A2
C143	87-010-176-080		C-CAP,S 680P-50 SL
C144	87-A11-167-080		C-CAP,S 27P-50 F CH
C145	87-010-197-080		C-CAP,S 0.01-25 B
C161	87-010-301-010		C-CAP,220P-50 CH
C162	87-010-191-080		C-CAP,S 0.015-50 F
C163	87-010-197-080		C-CAP,S 0.01-25 B
C164	87-A11-166-080		C-CAP,TN 47-4 M F93 B
C167	87-010-178-080		C-CAP,S 1000P-50 B
C169	87-010-319-080		C-CAP,S 56P-50 CH
C210	87-010-197-080		C-CAP,S 0.01-25 B
C211	87-010-197-080		C-CAP,S 0.01-25 B
CF103	87-A90-456-080		C-FLTR,PFWCC 450J3
CN101	87-A60-759-080		C-CONN,20P V 524652091
IFT101	87-008-420-080		COIL,IFT 450K MW
L101	87-A50-583-080		C-COIL,S 2.2UH K FCI2012H
L102	88-RC6-608-080		C-COIL,FM RF(Y)
L104	88-RC6-609-080		C-COIL,FM OSC(Y)
L110	87-005-375-080		C-COIL,100UH J NL322522
L112	S1-929-430-000		COIL ANT ASSY
SFR101	87-A91-466-040		C-SFR,K 22K H RH03AEC
TC101	87-A91-761-080		C-TRIMMER,25P TZVY2R250A
TC102	87-A91-762-180		C-TRIMMER,10P TZVY2Z100A110
VC101	87-017-925-080		C-VARI-CAP,KV1460
VC103	87-017-925-080		C-VARI-CAP,KV1460
VC110	87-A40-799-040		C-VARI-CAP,KV1610S
CONTROL & DISPLAY C.B			
C150	87-010-831-080		C-CAP,U 0.1-16 F
C151	87-010-831-080		C-CAP,U 0.1-16 F
C152	87-012-358-080		C-CAP,S 0.47-10 FZ
C153	87-012-358-080		C-CAP,S 0.47-10 FZ
C154	87-010-831-080		C-CAP,U 0.1-16 F
C155	87-A12-861-080		C-CAP,4.7U-16 ZF GRM42
C156	87-010-197-080		C-CAP,S 0.01-25 B
C157	87-A10-057-080		C-CAP,TN 100-4 F95 E
C158	87-012-358-080		C-CAP,S 0.47-10 FZ
C159	87-012-358-080		C-CAP,S 0.47-10 FZ
C165	87-010-831-080		C-CAP,U 0.1-16 F
C166	87-010-831-080		C-CAP,U 0.1-16 F
C168	87-A11-178-080		C-CAP,TN 330U-4 M F93 D
C201	87-010-156-080		C-CAP,S 15P-50 SL
C202	87-010-311-010		C-CAP,S 12P-50 J CH
C203	87-B30-196-010		BAT,PAS920S-VL3T
C204	87-010-197-080		C-CAP,S 0.01-25 B
C205	87-010-197-080		C-CAP,S 0.01-25 B
C206	87-010-197-080		C-CAP,S 0.01-25 B
C207	87-010-197-080		C-CAP,S 0.01-25 B
C208	87-010-197-080		C-CAP,S 0.01-25 B
C209	87-A10-047-080		C-CAP,U 1-10 ZF
C212	87-010-197-080		C-CAP,S 0.01-25 B
C213	87-010-197-080		C-CAP,S 0.01-25 B
C215	87-010-178-080		C-CAP,S 1000P-50 B
C216	87-A10-057-080		C-CAP,TN 100-4 F95 E
C217	87-A10-422-080		C-CAP,TN 10-4 A TCF
C218	87-010-831-080		C-CAP,U 0.1-16 F
C219	87-010-197-080		C-CAP,S 0.01-25 B
C222	87-A11-797-080		C-CAP,S 2.2-16 ZF
C251	SA-020-001-0C0		C-CAP,E 2.2-10V
C252	87-010-197-080		C-CAP,S 0.01-25 B
C253	87-A10-952-080		C-CAP,TN 22-4 M A MCA
C254	87-010-805-080		C-CAP,S 1-16 ZF
C255	87-010-149-080		C-CAP,S 5P-50 CH
C256	87-010-319-080		C-CAP,S 56P-50 CH
C257	87-010-152-080		C-CAP,S 8P-50 CH
C258	87-010-831-080		C-CAP,U 0.1-16 F
CN201	87-A60-758-080		C-CONN,20P V 533642091
HJ151	87-A60-760-010		JACK,3.5 ST W/O SW
L151	87-A50-606-080		C-COIL,S 1UH K
L152	87-A50-606-080		C-COIL,S 1UH K
L153	87-A50-606-080		C-COIL,S 1UH K
L201	S0-002-002-000		COIL,TOROIDAL

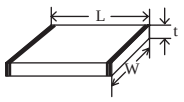
REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
L202	87-003-246-080		C-COIL,S 33UH
L251	87-A50-037-080		C-COIL,D-D 5CDLU
L252	87-003-246-080		C-COIL,S 33UH
L254	87-003-246-080		C-COIL,S 33UH
LCD201	8B-RCA-602-010		LCD,BRC-A(YZ)
S201	87-A91-979-080		C-SW,TACT SOT-152HST
S202	87-A91-979-080		C-SW,TACT SOT-152HST
S203	SK-QL9-020-000		SW,TACT SKQLLC
S204	S1-320-011-000		SW,JOG SLLB310400
S205	87-A91-979-080		C-SW,TACT SOT-152HST
S206	SK-QL9-020-000		SW,TACT SKQLLC
S207	87-A92-281-080		C-SW,TACT KPS1114S
S208	87-A91-979-080		C-SW,TACT SOT-152HST
VR151	87-A91-003-010		VR,RTRY 20KCX2 H XV0102GPH1N15
X201	87-030-349-010		VIB,XTAL 75K

○チップ抵抗部品コード／CHIP RESISTOR PART CODE

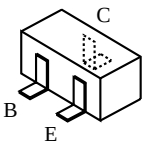
チップ抵抗部品コードの成り立ち
Chip Resistor Part Coding



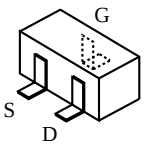
チップ抵抗
Chip resistor

容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法／Dimensions (mm) 外形／Form	L	W	t	抵抗コード ：A Resistor Code：A
1/16W	1005	±5%	CJ		1.0	0.5	0.35	104
1/16W	1608	±5%	CJ		1.6	0.8	0.45	108
1/10W	2125	±5%	CJ		2	1.25	0.45	118
1/8W	3216	±5%	CJ		3.2	1.6	0.55	128

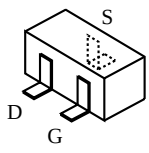
TRANSISTOR ILLUSTRATION



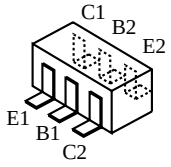
2SA1313
2SA1362GR
2SA1588Y
2SC4116GR
2SC4215(O/Y)
RN2307



2SK880Y

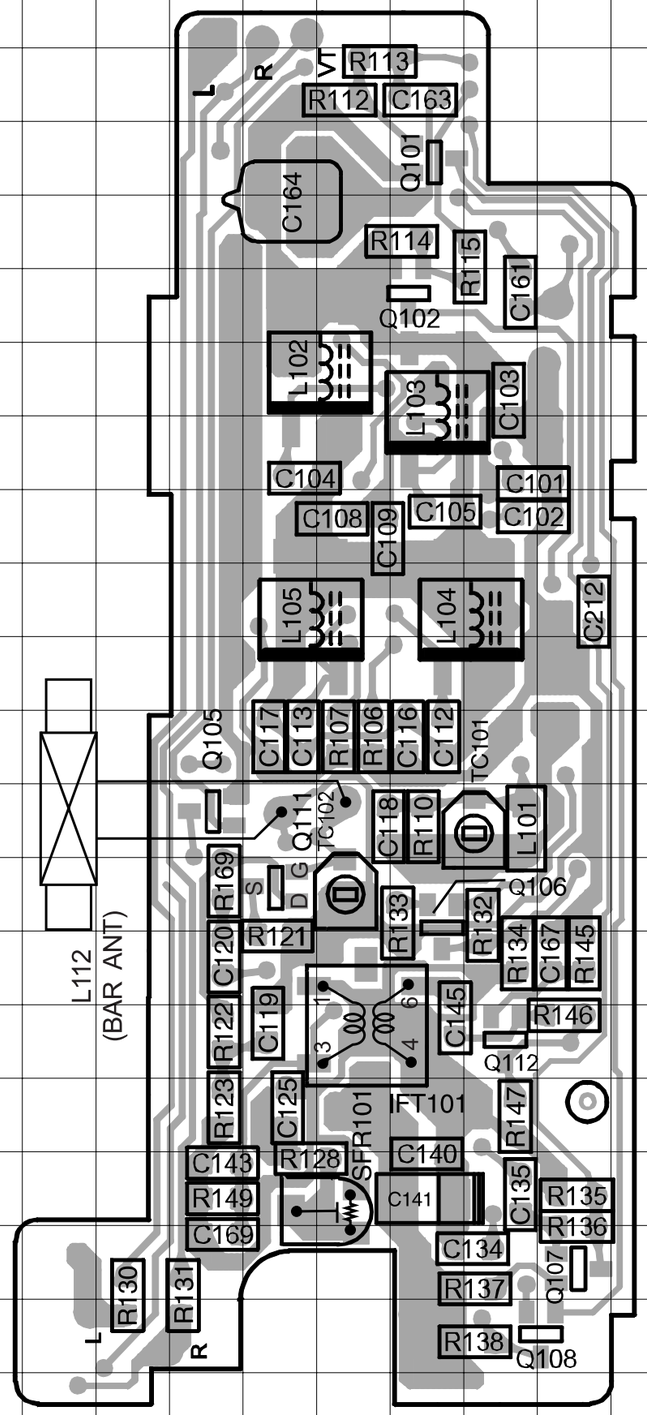


2SK882Y

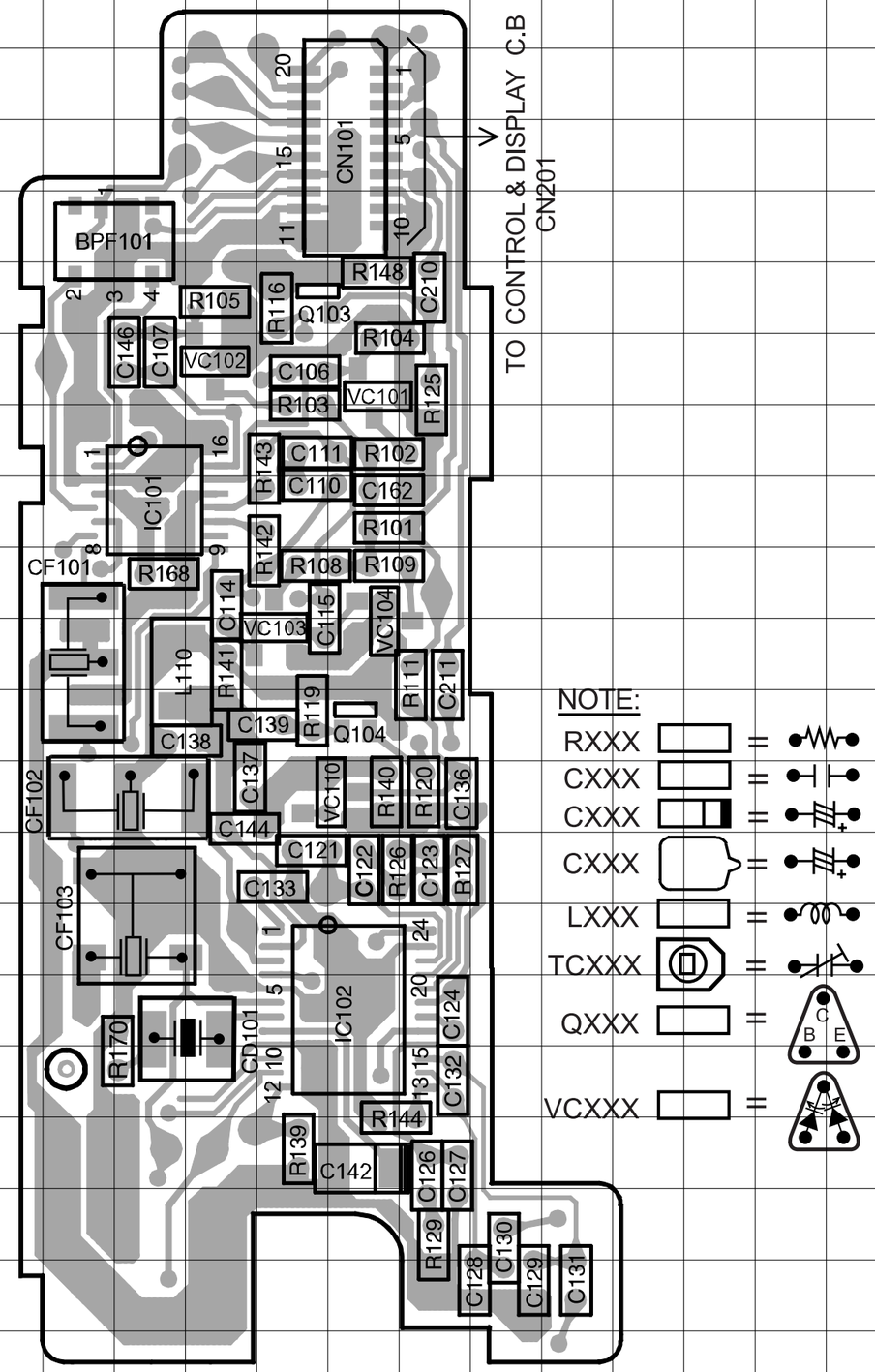


HN1B01F
HN1C03F
IMX1 HQQ

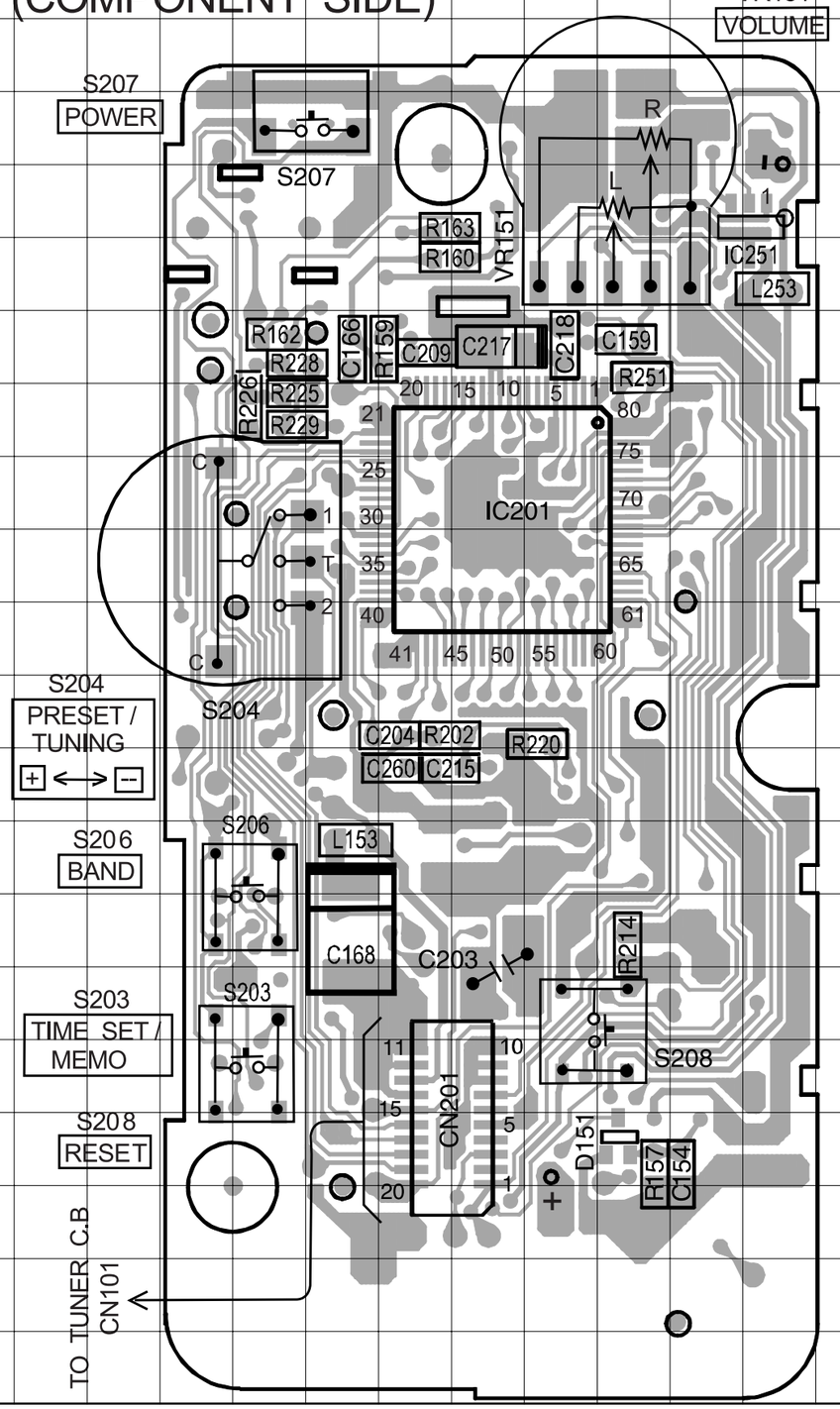
TUNER C.B (COMPONENT SIDE)



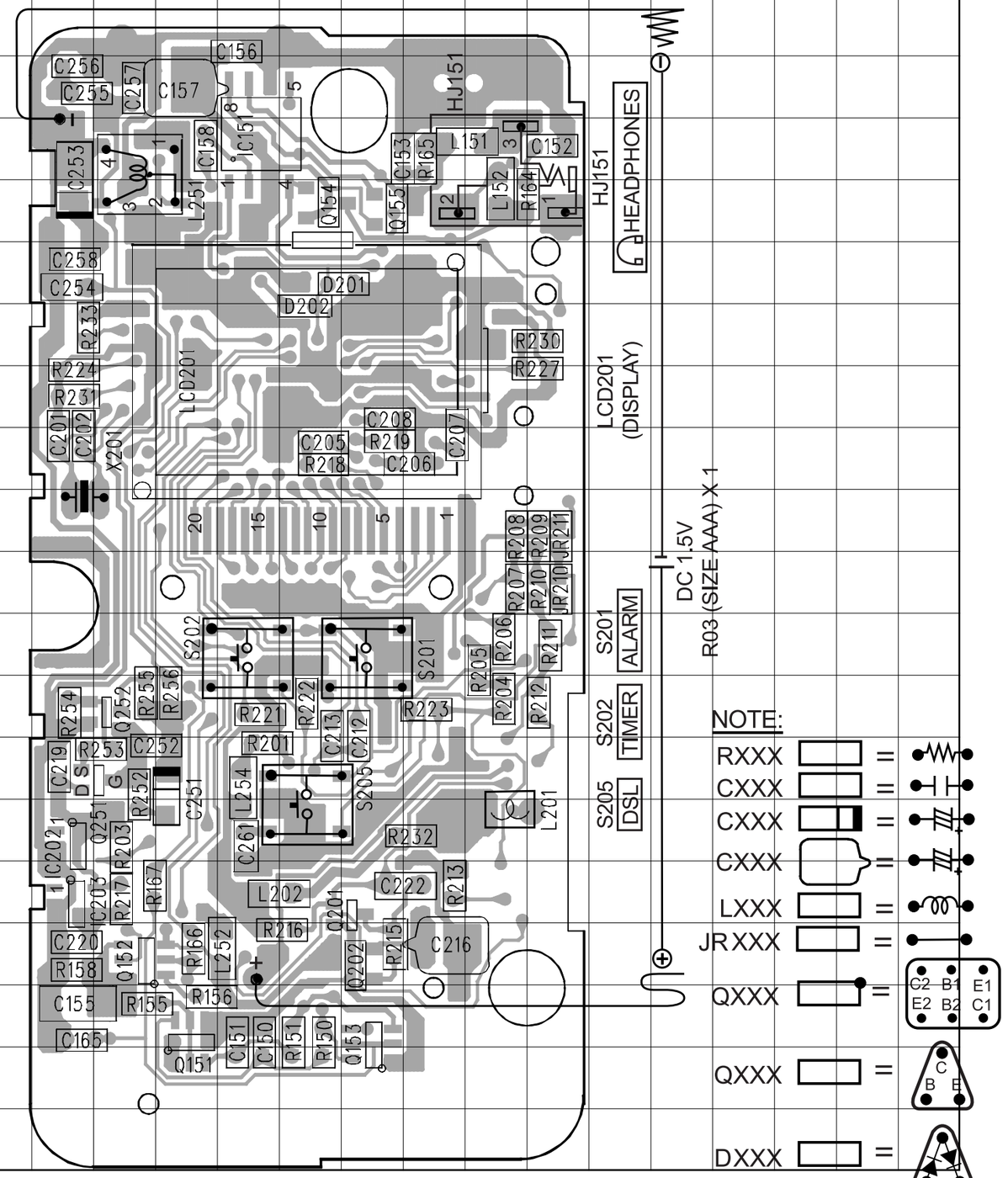
TUNER C.B (PATTERN SIDE)



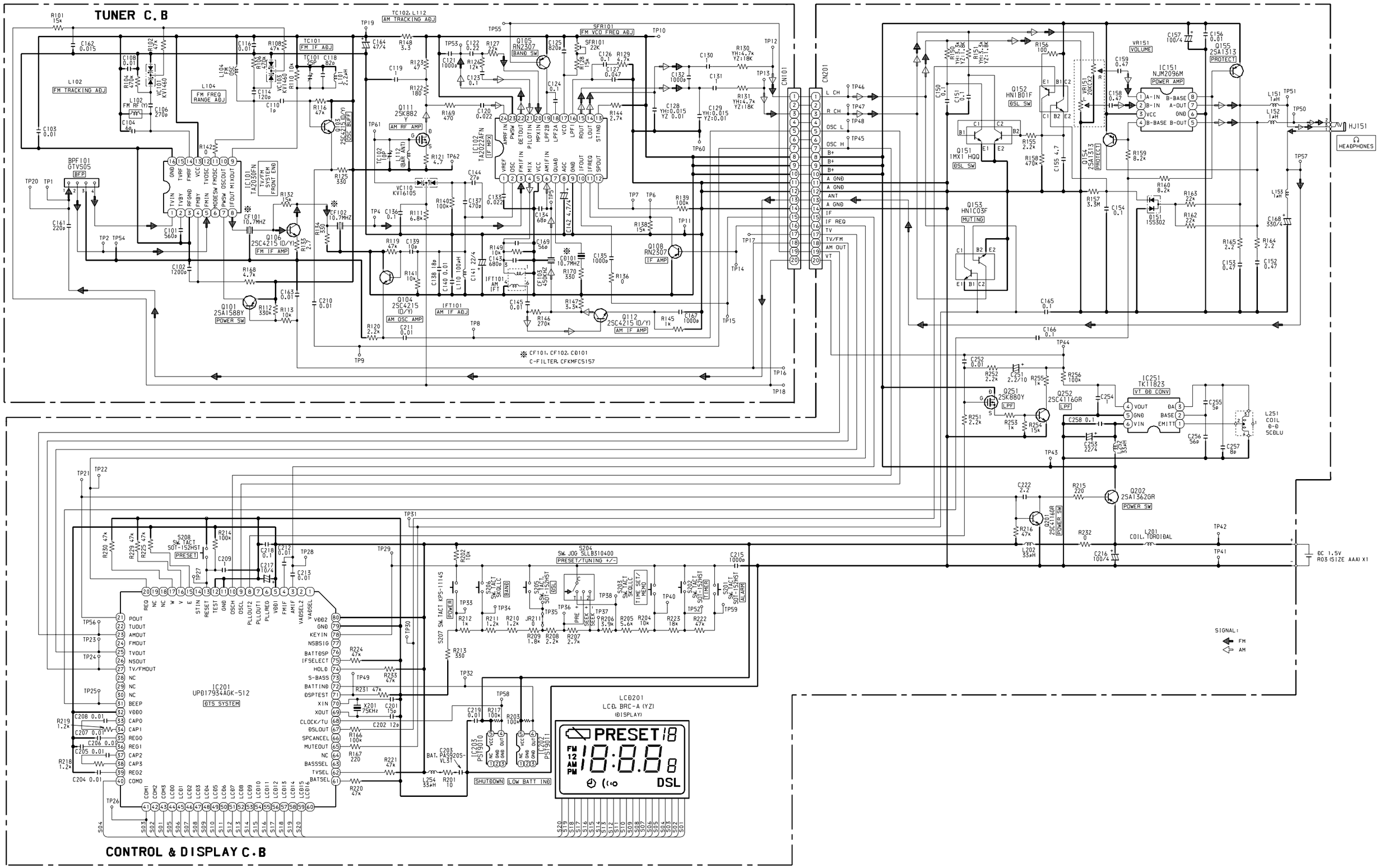
CONTROL & DISPLAY C.B
(COMPONENT SIDE)



CONTROL & DISPLAY C.B
(PATTERN SIDE)



SCHEMATIC DIAGRAM (TUNER / CONTROL & DISPLAY)



VOLTAGE CHART

TUNER SECTION
TEST CONDITION: SET FM TUNER ON ONE FREQUENCY

IC101 (TA2030FN)

PIN'S NUMBER	1	2	3	4	5	6	7	8
FM	0	0.09	0	0.92	0.16	0.23	1.45	1.38
PIN'S NUMBER	9	10	11	12	13	14	15	16
FM	1.45	1.37	1.45	1.29	1.45	1.45	1.30	0

IC102 (TA2022AFN)

PIN'S NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
FM	0.89	1.47	0.89	1.47	1.47	1.47	1.41	0.78	0	1.47	1.46	0.01
PIN'S NUMBER	13	14	15	16	17	18	19	20	21	22	23	24
FM	0.03	0.55	0.56	0.65	1.36	0.02	0.01	0.11	0.01	0.58	1.47	0.02

IC251 (TK11823)

PIN'S NUMBER	1	2	3	4	5	6
FM	0.01	0.76	0.02	1.46	0	1.39

POWER SECTION
TEST CONDITION: FM TUNER ON

IC151 (NJM2096M)

PIN'S NUMBER	1	2	3	4	5	6	7	8
FM	0	0	1.47	0.83	0.69	0	0.69	0.83

CPU CONTROL SECTION
TEST CONDITION: FM TUNER ON

IC201 (UPD17934AGK-512)

PIN'S NUMBER	1	2	3	4	5	6	7	8	9	10
FM	1.30	1.25	0.15	0.66	1.48	0	0.50	0.36	0.40	0.60
PIN'S NUMBER	11	12	13	14	15	16	17	18	19	20
FM	0	0	1.47	0.70	1.48	0	0	0	0	0
PIN'S NUMBER	21	22	23	24	25	26	27	28	29	30
FM	0.68	0.62	1.46	0.01	1.50	1.53	0	0.71	0.71	0.71
PIN'S NUMBER	31	32	33	34	35	36	37	38	39	40
FM	0	1.48	0.76	2.10	2.73	1.55	0.78	2.26	3.02	/
PIN'S NUMBER	41	42	43	44	45	46	47	48	49	50
FM	/	/	/	/	/	/	/	/	/	/
PIN'S NUMBER	51	52	53	54	55	56	57	58	59	60
FM	/	/	/	/	/	/	/	/	/	/
PIN'S NUMBER	61	62	63	64	65	66	67	68	69	70
FM	0	1.47	0.67	0	0	0	0	1.46	0.77	0.55
PIN'S NUMBER	71	72	73	74	75	76	77	78	79	80
FM	0	1.46	0.62	1.47	0	0.87	0.86	1.48	0	1.48

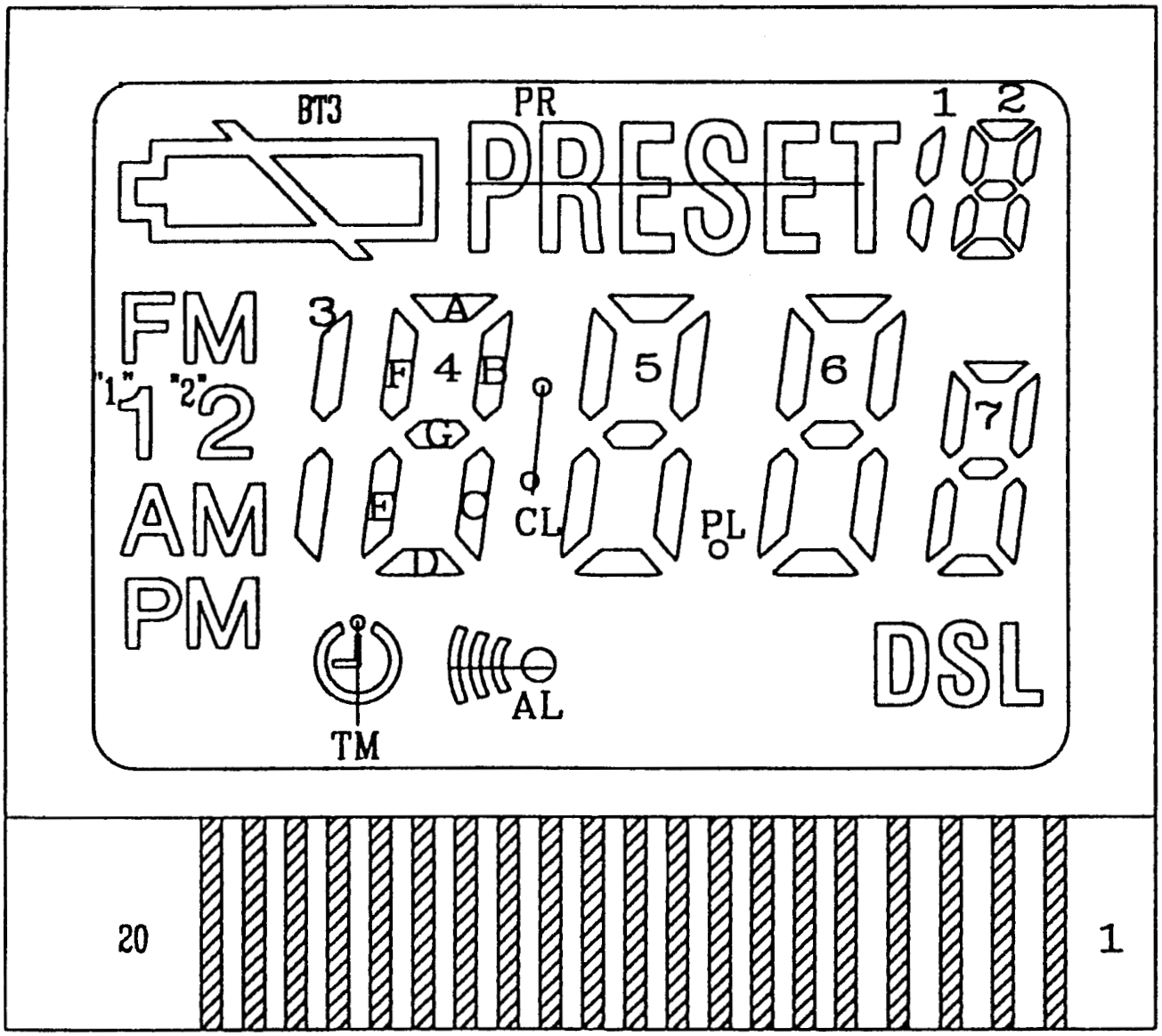
IC202 (PST9011)

PIN'S NUMBER	1	2	3	4	5
LOW BATT.	0	0	0	1.46	1.48

IC203 (PST9010)

PIN'S NUMBER	1	2	3	4	5
SHUT DOWN	0	0	0	1.46	1.48

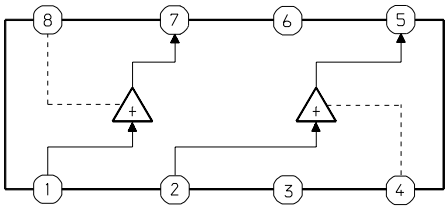
LCD DIAGRAM



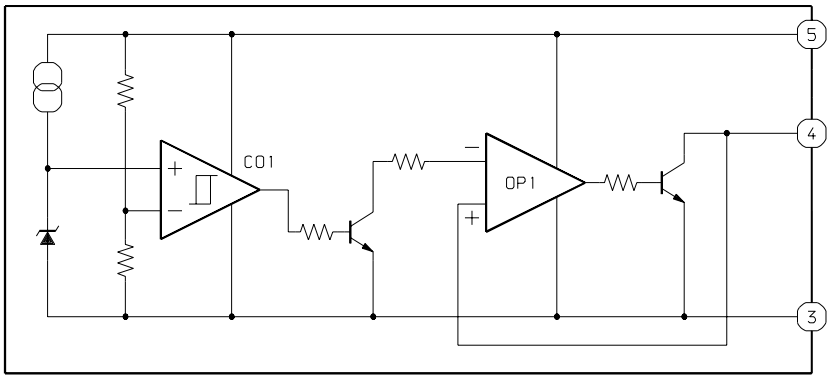
COM/PIN #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
COM-0				COM0		7D	7E	6D	6C	6E	PL	5D		4D	4E	3B.C	"2"		TM	AL
COM-1			COM1		7C	7G	7F	2D	6B	6G	6F	5C	5E	4C	4G	4F	"1"	PM	FM	
COM-2		COM2			7B	7A	2C	2G	2E	6A		5B	5G	CL	4B	4A		AM		
COM-3	COM3					DSL	2B	2A	2F	1B.C	PR		5A	5F			BT3			

IC BLOCK DIAGRAM

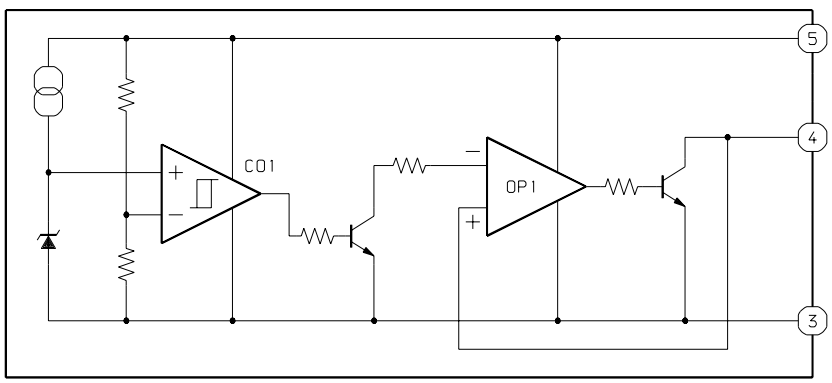
IC, NJM2096M



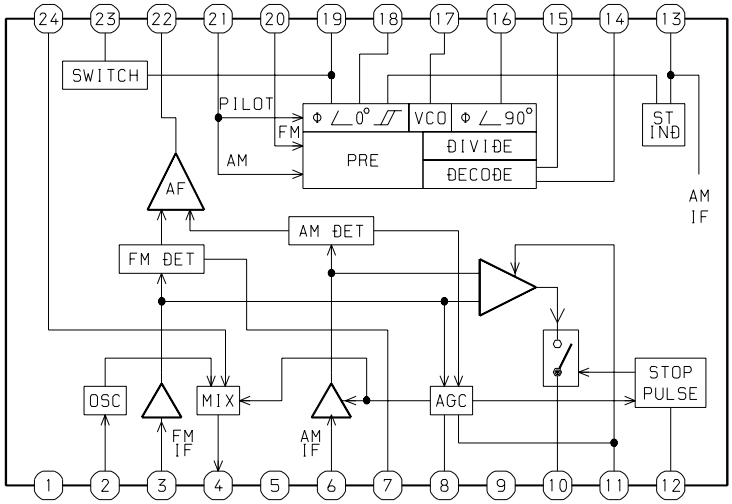
IC, PST9010



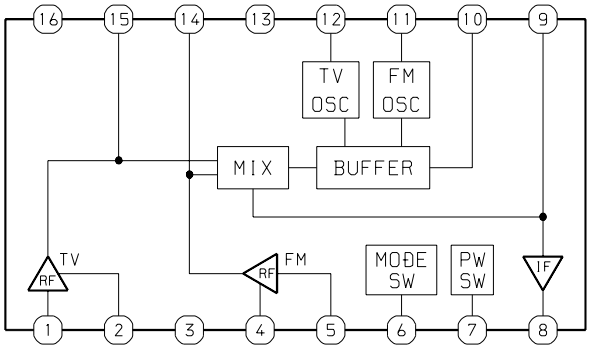
IC, PST9011



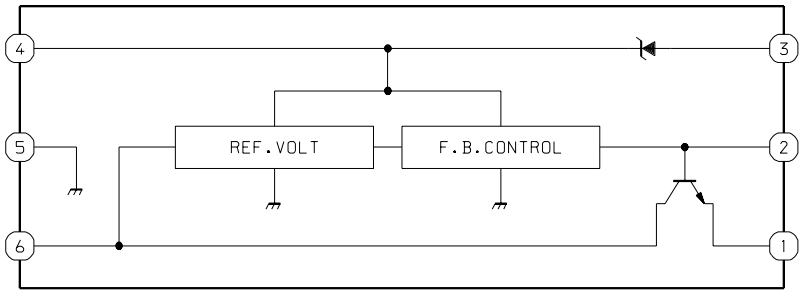
IC, TA2022AFN



IC, TA2030FN



IC, TK11823



IC DESCRIPTION

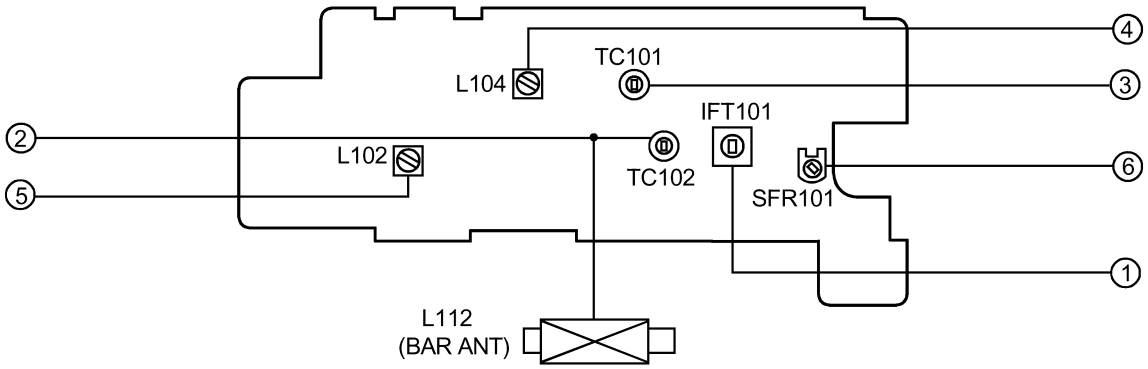
IC, µPD17934AGK-512

Pin No.	Pin Name	I/O	Description
1	VADSEL	I	"H": Voltage detection at VDD=3.0V, "L": Voltage detection at VDD=1.5V. (Not used)
2	VADSEL2	I	Not used.
3	AMIF	I	Input IF counter.
4	FMIF	I	Input IF counter.
5	VDD1	I	Input power supply.
6	PLLREG	I	Input PLL regulator. (Not used)
7	PLLOUT1	O	Output PLL charge-pump. (Not used)
8	PLLOUT2	O	Output PLL charge-pump.
9	OSCL	I	Input OSC low.
10	OSCH	I	Input OSC high.
11	GND	–	GND.
12	TEST	–	Connected to GND.
13	RESET	I	"L": System reset.
14	STIN	I	"H": Stereo indicator turn on. (Not used)
15	E	I	Version select. "L": JAPAN, "H": EUROPE, "L": USA, "H": USA WIDE.
16	V	I	Version select. "L": JAPAN, "L": EUROPE, "H": USA, "H": USA WIDE.
17	W	I	At USA WIDE. "L": TV & WEATHER, "H": TV / WEATHER.
18 ~ 19	NC	–	Not connected.
20	REQ	O	"H": IF output.
21	POUT	O	Output high voltage at TUNER & TIMER & ALARM operating.
22	TUOUT	O	Output high voltage at TUNER operating. (Not used)
23	AMOUT	O	Output low voltage at TUNER operating AM band.
24	FMOUT	O	Output low voltage at TUNER operating FM band. (Not used)
25	TVOUT	O	Output low voltage at TUNER operating TV band.
26	NSBOUT	O	Output low voltage at TUNER operating NSB band. (Not used)
27	TV/FMOUT	O	Output low voltage at TUNER operating FM/TV band.
28 ~ 30	NC	–	Not connected.
31	BEEP	O	Output BEEP sound.
32	VDD0	I	Input power supply.
33 ~ 34	CAP0 ~ CAP1	–	Connect capacitor for LCD.
35 ~ 36	REG0 ~ REG1	–	LCD regulator.
37 ~ 38	CAP2 ~ CAP3	–	Connect capacitor for LCD.
39	REG2	–	LCD regulator.
40 ~ 43	COM0 ~ COM3	O	LCD common.
44 ~ 59	LCD0 ~ LCD15	O	LCD segment.
60	LCD16	O	LCD segment. (Not used)
61	BATSEL	I	Selection of voltage detection. "H": Using 76, "L": Using 78.
62	TVSEL	I	Selection of TV. "H": Without TV, "L": Within TV.
63	BASSSEL	I	Selection of S-BASS operation. "H": Using 73, "L": Using 78. (Not used)
64	NC	–	Not connected.
65	MUTEOUT	O	Output high voltage at muting.

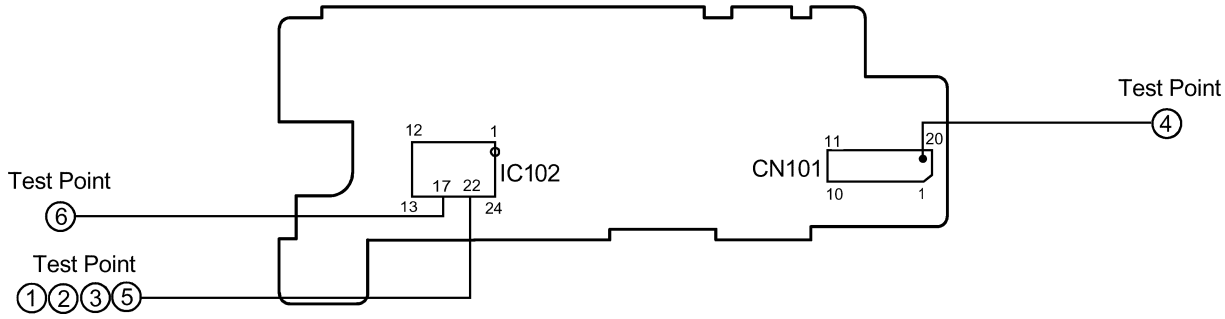
Pin No.	Pin Name	I/O	Description
66	SPCANCEL	O	Ouput high voltage at speaker cancelling. (Not used)
67	DSLOUT	O	Ouput high voltage at S-BASS operating.
68	CLOCK/TU	I	TUNER/CLOCK direction. "H": TUNER operation, "L": CLOCK operation.
69	XOUT	O	Output CPU clock.
70	XIN	I	Input CPU clock.
71	DSPTEST	I/O	Display test. "H": All characters turn on.
72	BATTIND	O	"L": Battery indicator (BT3) turn on.
73	S-BASS	I	"H": S-BASS operate. (Not used)
74	HOLD	I	"L": Holding key operate.
75	IFSELECT	I	IF selection. "H": IF=10.75MHz, "L": IF=10.7MHz.
76	BATTDSP	I	Input supply voltage for battery indication. (Not used)
77	NSBSIG	I	Input NSB signal (DC) for selection of NSB stations. (Not used)
78	KEYIN	I	Input DC for KEY operation.
79	GND	–	GND.
80	VDD2	I	Input power supply.

ADJUSTMENT

TUNER C.B (COMPONENT SIDE)



TUNER C.B (PATTERN SIDE)



1. AM IF Adjustment
   Settings : • Test point : IC102 (TA2022AFN) Pin22
   • Adjustment location :
   IFT101 ..... 450kHz

2. AM Tracking Adjustment
   Settings : • Test point : IC102 (TA2022AFN) Pin22
   • Adjustment location :
   L112 ..... 630kHz Waveform max.
   TC102 ..... 1440kHz Waveform max.

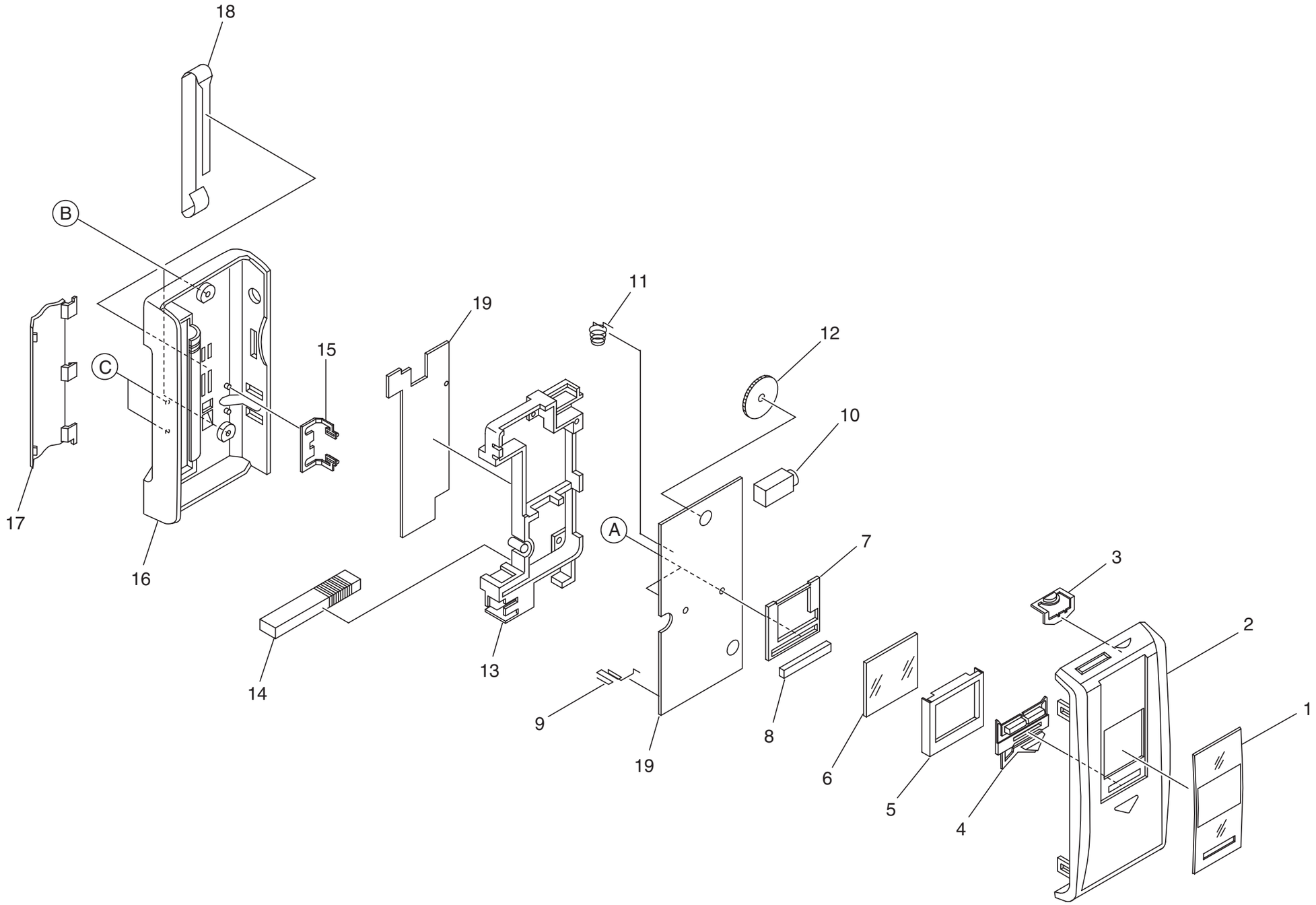
3. FM IF Adjustment
   Settings : • Test point : IC102 (TA2022AFN) Pin22
   • Adjustment location :
   TC101 ..... 10.7MHz

4. FM Frequency Range Adjustment
   Settings : • Test point : CN101 Pin 20
   • Adjustment location : L104
   Method : Set to FM 87.5MHz and adjust L104 so that the voltage at the test point becomes 2.3V ± 0.2V.

5. FM Tracking Adjustment
   Settings : • Test point : IC102 (TA2022AFN) Pin22
   • Adjustment location :
   L102 ..... 88MHz Waveform max.

6. FM VCO Frequency Adjustment
   Settings : • Test point : IC102 (TA2022AFN) Pin17
   • Adjustment location :
   SFR101 ..... 19kHz ± 0.1kHz

MECHANICAL EXPLODED VIEW



MECHANICAL PARTS LIST

! = ⚠ SAFTY PARTS
C = Components marked
All components used on this model at the production line are shown in this service manual.
However, please note that not all components will be available as spare parts for after-sales service.
Components marked S and O are designated as spare parts for service and will be stocked at the spare parts centers.
Components marked X and R are not designated as spare parts for after sales service, and will not be stocked at the spare parts centers.

UNIT-NAME	!	C	REF-NO	PARTS-NO	PARTS-NAME	SUFFIX&MODEL	
						CR-LD120 YZ1SC	CR-LD120 YH1SC
		O	1	8B-RCA-004-010	WINDOW,LCD	a	b
		O	2	8B-RCA-001-010	CABI,FRONT	a	b
		O	3	8B-RCA-006-010	BTN,POWER	a	b
		O	4	8B-RCA-005-010	BTN,(A)	a	b
		X	5	8B-RCA-203-010	COVER,LCD	a	b
		O	6	8B-RCA-602-010	LCD,BRC-A(YZ)	a	b
		X	7	8B-RCA-202-010	HLDR,LCD	a	b
		O	8	8B-RCA-204-010	PLATE,RUBBER CONTACT	a	b
		O	9	8B-RCA-205-010	BAT-CONTACT,(+)	a	b
		O	10	87-A60-760-010	JACK,3.5 ST W/O SW	a	b
		O	11	8B-RCA-206-010	BAT-CONTACT,(-)	a	b
		O	12	87-A91-003-010	VR,RTRY 20KCX2 H XV0102GPHN	a	b
		X	13	8B-RCA-201-010	HLDR,PWB	a	b
		O	14	88-RC6-610-010	BAR-ANT,MW	a	b
		O	15	8B-RCA-007-010	BTN,BAND/MEMO	a	b
		O	16	8B-RCA-002-010	CABI,REAR	a	b
		O	17	8B-RCA-003-010	LID,BATT	a	b
		O	18	S0-912-130-000	CLIP BELT	a	b
		X	19	8B-RCA-601-010	PWB,COMB 3M	a	b
		O	A	87-067-511-010	SCREW,V+1.4-2 BK	a	b
						CR-LD120 YZ1SC	CR-LD120 YH1SC
		O	B	87-262-534-310	V+1.7-7 BLK	a	b
		O	C	87-262-528-310	V+1.7-3.5 BLK	a	b

COLOR NAME TABLE

Basic color symbol	Color	Basic color symbol	Color	Basic color symbol	Color
B	Black	C	Cream	D	Orange
G	Green	H	Gray	L	Blue
LT	Transparent Blue	N	Gold	P	Pink
R	Red	S	Silver	ST	Titan Silver
T	Brown	V	Violet	W	White
WT	Transparent White	Y	Yellow	YT	Transparent Yellow
LM	Metallic Blue	LL	Light Blue	GT	Transparent Green
LD	Dark Blue	DT	Transparent Orange	GM	Metallic Green
YM	Metallic Yellow	DM	Metallic Orange	PT	Transparent Pink
LA	Aqua Blue	GL	Light Green	HT	Transparent Gray
HM	Metallic Gray	NH	Champagne Gold	M	Wood Pattern

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